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Note: The following is a direct, unedited translation of a report

carried on by the Japanese during their occupation of Manchuria (referred to as "Manchukuo" in the body of the report). The information is out of date and the report verbose, but the complete translation is forwarded for whatever value it may have. Since the Chinese government has retained most of the Japanese scientific technicians in China, this report may give some indication that the Chinese are carrying on work in similar projects. It is requested that limited distribution be given this report.

**I. Bacteriological Research in Manchukuo:**

The Japanese bacteriological research in Manchukuo can be divided into two sections. The first is the national defence principle (against Russia), as pertains to Manchukuo's existence and is bacteriological research as one form of psychological war strategy against Russia. The second is bacteriological work based on health, sanitation and disease prevention, as Manchukuo is one of the outstanding regions of contagious diseases in the world. Of course, both the first and second purposes are closely associated with the necessity of guaranteeing safety to the region from a national defense standpoint.

**A. Varieties of Experiment Organizations:**

The research organizations that had the first objective were generally known as the "KANO" Corps. This was an army composed of a group of bacteriologists. The research station was located at a place about two hours' ride by bus from Harbin. This station worked on gathering material on Russian bacteriological warfare, preventive measures, research on offensive, and, finally, research and investigations on food, water, and survival of troops in cold regions. The commander of the corps was Major-General Ishii, an army doctor. He was extremely active and energetic in the establishment and progress of this research organization. The organization was not only the central organization in Manchukuo and Japan, but it can also be said that it was the only organization in the whole of Japan carrying on research on survival in the north and on anti-Russian bacteriological warfare. Especially after the outbreak of the war in the Pacific, due to lengthening of the fighting lines in the South, and the subsequent necessity of centering the interest in the Pacific theater, the anti-Russian research and the research on cold regions were specialized in and handled only by this organization.

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This research station was affiliated with the Kwantung Army, and its organization was planned at the time Manchukuo was established. Major-General Ishii's personal activities played a great part in its establishment. He went personally to the General Staff Office of the Japanese Army Ministry and succeeded in obtaining a financial estimate. Because of that, he was able to set up extensive research facilities. (For example, guinea pigs disappeared from Tokyo for a time prior to the outbreak of the Pacific war, and Japanese medical researchers had great difficulty. Stories attributed the shortage to Major-General Ishii's buying up the whole lot of guinea pigs.)

Research organizations with the second purpose, that is disease prevention among the Manchurian people, numbered three in Manchukuo. The first was the Changchun National Health Technical Station; the second, the Bacteriological Class Room of the Mukden Medical College; and the third was the Health Experiment Station affiliated with the South Manchurian Railway at Dairen.

The inoculation rate of the Manchukuo people is very low, and, during those days, it was well known as a region famous for the outbreak of contagious diseases. The following twelve contagious diseases were known as "Current Contagious Diseases", and had to be inoculated against: cholera, plague, dysentery, children's dysentery, typhoid fever, paratyphus, smallpox, eruptive typhus, scarlet fever, diphtheria, meningitis, and recurrent fever.

The above-mentioned organizations were connected with the administrative government departments (welfare section), and had as their immediate aims the prevention of disease and the raising of the general health level. However, they were of strategic importance in their position behind the fighting lines, and the investigations and research were conducted under the leadership and supervision of the "Kamo" Corps.

The characteristics of these three research stations were practical ones. The basic research was carried out in Japan, and the organizations in Manchukuo had (T.N. blank space) items as their duties. Therefore, the organizations in Manchukuo can be said to have been between purely academic organizations and purely administrative ones (welfare).

Of the three establishments, the largest one was the National Health Technical Department in Changchun, established in the first year of Kotoku (1933). The one with the longest history is the SMR Health Experimenting Station in Dairen. Due to the pressing necessity for the prevention of disease within the old SMR administrative rights district, activity began in the 2nd year of Showa (1927), but when the laws on overseas rights were promulgated within Manchukuo in the latter part of 1937, turning over the organizations held by the SMR to the country of Manchukuo, this organization was put into the aforementioned "Kamo" Corps. After that it became a military organization. The only organizations not turned into military ones were the National Health Technical Department in Changchun and the Mukden Medical College.

#### B. Internal Aspects of the Various Research Organizations:

(1) Kamo Corps: (Because the Kamo Corps was located on the outskirts of Harbin and was occupied by the Russians, it was impossible to get information directly. Also, the majority of the researchers were seized by the Russians, and there are no Japanese in Changchun who were active in this field directly within the Corps. Discussion will be restricted to indirect information.)

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As was explained above, the attributes of the Kamo Corps were largely those of its commander, Ishii, and his personal ambitions played a great part in the research work also. Ishii received a yearly budget of 30,000,000 yen directly from the General Staff of the Japanese Army Ministry. It was originally planned that there would be a staff of about 300, but actually there were no more than 50.

Ishii is a graduate of the Medical Section of the Kyoto Imperial University and has an extensive medical knowledge. Through professors in his alma mater he was able to obtain researchers.

At first Ishii had many backers within the military, but in later years, due to his acts of propaganda, his backers disappeared. As a result, there are a great many people who say that no important research was done from the practical standpoint. However, as the experiments were never announced to the outside, there was no way of determining their results, unless Ishii himself were interrogated, or others of the researchers who actually carried on the work. Direct interrogation, however, is easy. Ishii had his own private plane, and a little before the surrender, he flew back to Japan to seek refuge and is there now. Also there are available a great many men who are graduates of the Medical Section of the Kyoto Imperial University, as well as men who were actually engaged in research. The organization of the Kamo Corps and the results of the experiments there can be learned by the following methods:

- (a) General Staff of the Japanese Army Ministry or the Medical Affairs Bureau.
- (b) Interrogation of Major-General Ishii.
- (c) Health and Sanitation Departments of the Medical Section of the Kyoto Imperial University.

In Changchun at the present time is the person who was personally closely associated with Ishii, and who cooperated indirectly in the work. This is the head of the former National Health Technical Department, Abe, Toshio. He is the general leader among the health technicians for Manchukuo, but was not involved in Ishii's work from an academic standpoint. He believes the activities of the Kamo Corps were based upon the personal ambitions of Ishii, although it was necessary for him to cooperate. For this reason, his following bacteriological outline is of great value as a reference.

(2) Changchun National Health Technical Department: The set-up and activities of this organization are the same as those explained in the accompanying pamphlet. The results of the research of this organization are given in the first issue of "Report of The Research of The Health Technical Department", which was published in 1939. However, until the time of the surrender, only three volumes of this were published.

At the present time this research organization has been taken over by the Chinese central government, and is engaged in the profitable government business of making vaccines. The greater part of the equipment of this station was taken by the Russians, and the majority of the valuable documents and researchers was taken by the Chinese Eighth Route Army. (Because the withdrawal of the Eighth Route was carried out with such great rapidity, part of the materials that were not completely packed were left behind. The department head, MD. Abe, Toshio remained behind because he was sick.)

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(3) Bacteriological Class of the Mukden Medical College: The main research here was on eruptive typhus.

(4) Dairen SMR Health Experimenting Station: As explained above, this station was affiliated with the Kamo Corps in 1938 (Fifth year of Kotoku). The organizational setup just prior to its becoming a military organization is as follows:

Total area - 38,000 square meters  
Total area of main building - 2,000 square meters  
Auxiliary buildings - disinfectant producing room, veterinary, virus inoculation room, stables, feed rooms, horse barns, inoculation and transfusion rooms, rooms for examining cattle and horses, "Bokuten shitsu", "Daiten Kin Shitsu", rooms for dissecting and embalming large animals, plague rooms, small animal rooms, warehouse, organization rooms, disinfecting rooms, experimental laboratories (22 buildings), observation stations, ventilation experiment rooms, making a total of 38 buildings.

The experimental purpose, its setup, and the work of this experiment station is as follows:

(a) Purpose and setup: The purpose of the experimental facilities was to carry out research on all health and sanitation problems, to apply the results to reality, and thus add an actual asset to the health and sanitation conditions of both the Japanese and the Manchurian races. In order to achieve those aims, research, investigations, inoculations, manufacture of medicine, and the promotion of health consciousness, were worked on in every branch. The setup was bacteriology, pathology, chemistry, health, serum-therapy, and inoculation.

(b) Work: The work of this station can be divided into the following four groups: research, manufacture, approval analyses, and promotion of health consciousness.

#### 1. Research phase.

Research on contagious disease, eruptive fever, eruptive typhus, plague, scarlet fever, diphtheria, contagious diseases of the digestive organs, smallpox, tetanus, rabies, glanders, maggot disinfectant.

Research on environment, food and drinking water, thyroid gland, biological research on sun rays, climatic sanitation, smoke and dust abolishment, city and town noise, home sanitation.

Research on the problem of nourishment, nutritional deficiency of the Japanese in Manchuria, especially children, study of the nutritional value of the food resources in Manchuria, the food value of Chinese imports and their adaptability to the Japanese.

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ii. Manufacturing. Manufacturing of medicine for the prevention, treatment, and diagnosis of more than 50 varieties of contagious diseases.

iii. Approval analysis.

The various public health problems of the government offices and public organizations (locally sold food and fluids, drinking water, patent medicines, eating utensils, cosmetics, etc.), and medical evaluation.

Requested inspection of medicines to be bought or sold, food, thermometers, etc.

Investigations requested by doctors as necessary for diagnosis.

iv. Promotion of sanitation consciousness.

The promotion of health consciousness is one of the principal duties of this station, and efforts were made to increase the caution of the people through public and individual health statements in the form of speeches and newspaper and magazine articles.

All members of this station, from the chief down, were taken away by the Russians as they occupied Dairen.

#### Bacteriological Warfare Disease Prevention Theory:

As explained above, Manchuria is well known throughout the world for the outbreak of contagious diseases there. Therefore, it is considered a very dangerous region if the enemy should happen to employ bacteriological warfare. The Manchurian Health Technical Department must have special responsibility for protecting the rear of the fighting lines. On this point, the viewpoint of the department head, MD. Abe, Toshio, announced in the latter part of 1941-1942, explains the working plans of the Kamo Corps. This thesis is concerned with basic concepts in setting up countermeasures to bacteriological warfare.

#### PREFACE:

Bacteriological warfare means bacteriological strategy, and in Japan and Manchuria at least, there is no clear conception of it; conditions in foreign countries are not known. Only some experts, and the number is very small, have given serious consideration to the matter, and the amount of general knowledge is of no consequence. The reason for this is that "black" methods of using bacteria secretly to take the lives of humans are something that is the opposite of, and does not agree with, the pure characteristics of the Japanese people. Therefore, if they should become victims of this type of warfare, they could not understand within their hearts. Also, general knowledge on this subject has not been disseminated. However, international conditions do not allow room for negligence. It is hoped that the general public will at least realize that bacteriological strategy will be an actuality. If this is not accepted, it will be impossible to effect a common effective defense. The main purpose of this thesis is to establish that fact.

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## 1. The Purpose of Bacteriological Strategy:

In accordance with the recent advances in air-raid defense consciousness, it appears that the general public has begun to realize a little of the meaning of bacteriological strategy; this is confined to the spreading of various bacteria overhead through enemy bombers, or the exploding of shells or bombs containing bacteria in our vicinity, or the spreading of bacteria of contagious diseases in addition to the actual bomb or shell damage.

When considered in detail, however, there are only one part of bacteriological strategy. Therefore, when actual bacteriological strategy plans are to be made, it is necessary to go beyond these ideas. The purpose of bacteriological warfare against the individual or group, when it is clear that weapons or arms cannot be used, or that it is not desirable to use arms or weapons, or it is best not to use them, is to diminish the aggressive strength of the enemy, or it dissolve it entirely. Therefore, one can guarantee that it will be used not only internationally, but also within the individual nation, and not only in times of war, but also when outwardly there is peace. The conflict between the various nations of the world after the previous European war was not confined to the small limits of simply deciding victory or defeat, through pure armed strength in the fighting lines; rather it was fought by the composite strength of the home fronts, the mother of that armed strength, after which victory or defeat was decided. Of course, regardless of whether the basic outward appearance of the enemy nation's ability in the cultural, political, economical, and industrial fields have any connection or not, the war was fought with eyes on the increase or decrease of the enemy country's total manpower and material resources. To attack the direct fighting strength of the enemy country, or, indirectly, the source of the total fighting strength, is a characteristic of modern warfare.

Regardless of whether you say manpower or material resources, the basis is man. The effectiveness of culture, politics, industry, and economics originates with man. Especially in international rivalry, regardless of what is said, the basis of national strength is man. Just what determines the national strength? It is nothing more than the population, or characteristics of the people who make up the nation.

Figures are simply figures, but characteristics are complicated. Physical and spiritual strength make up characteristics, but individual schooling and commonsense nourish them, and there are many cases where the individual's philosophy of life changes them to the right or to the left. Men's minds are not always centered on war, and in modern warfare, where mobilization in various branches of culture, politics, economics, industrialization, and other national activities is necessary, an insecure condition will arise between the purpose of the activities and the livelihood of the nation. The hearts of the people are very delicate; and with some small insecure feeling as the source, a great disturbance will be caused in the minds of the people in general. In carrying out a war with the total strength of the nation, this point is important.

Bacteriological warfare, from the nature of its characteristics, will concentrate upon this delicate point to a great extent. For example, even though the number of men that are lost may not be great, epidemics of

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contagious disease will cause a disturbance in the minds of the people, and the use of manpower to stop it, as well as the consumption of materials, would be natural, and would result in the diminishing of the national strength. Because of this there will be disturbances on the home front, with great influence in resistance strength. On a concrete basis, according to the varieties of bacteria used and the suitability of internal and external conditions, it would not be entirely impossible to lay the wake of death in a whole city or town. If international friendly relations were built on an ideal basis, bacteriological warfare would not be a problem, but in recent times, in spite of the outward appearances of peace, the cases are not few where actual conditions have been extremely violent. As a result, the boundary between peacetime and wartime is not only vague, but, even in peacetime, there are occasions when wartime conditions seem to prevail. Considering this, the more clandestinely bacteriological warfare can be carried out, the more deep-rooted is the necessity of establishing counter measures, more so than with anti-air and anti-gas measures.

The reason is that if bombs, shells, and poison gas are used, they are clear to everyone, and clearly announce the fact that a condition of war exists. Bacteriological warfare, however, even under outward conditions of international peace, can be carried on clandestinely, and there are cases where it has actually been so carried out. (For instance, there is an actual example of Russia's having spread bacteria within Manchuria during the Manchukuo era.)

The writer has written that there are cases where it has actually been carried out, but as far as this sentence is concerned, there is a great diversity of knowledge throughout the world. Some people will sincerely believe in it, and other people will say that such a thing is impossible. The former group is the flippantly informed one, and the latter group is the ordinary doubter with shallow and insufficient knowledge.

Bacteriological warfare, as can be understood by the foregoing, is "something that can very well come about", and each individual must become familiar with the facts, and, knowing that "it can come about", be prepared in his mind. And during peacetime, since it is something that can be done secretly and in the background, there isn't one person who can say with conviction that "there isn't such a thing".

## 2. The Aims of Bacteriological Warfare:

With the above state of affairs and considerations as a basis, for convenience sake, occasions upon which bacteriological warfare would be carried out would fall into the following two categories:

- a. Bacteriological warfare in the front lines.
- b. Bacteriological warfare with home front disturbances as the aim.
  - a. Bacteriological strategy in the front lines is to lead one's supporters into an advantageous position during armed warfare, and has the aim of diminishing the fighting strength of the enemy. With the intention of supplementing firearms like bombs and shells in an active or passive way, various methods of bacteriological warfare are used as the occasion demands. For example, during the Chinese Incident, when the Chinese retreated, they threw cholera bacteria

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into the wells or the food, as a result of which the Japanese Army and the remaining civilian populace were inflicted with huge losses. This is clearly a negative method of bacteriological warfare in the fighting lines. These incidents occurred frequently and it must be realized that they will occur in the future.

b. Bacteriological warfare with home front disturbances as the aim. As explained above, in an all out war, culture, politics, economics, industry and national management, are, in a broad sense, closely related to and inseparable from the fighting forces. In future warfare it is not difficult to suppose that the enemy will endeavor to disrupt our cultural, political, economic, and industrial bases to help in the disintegration of the fighting efficiency.

It is natural that the cultural, political, economical, and industrial activities of a nation be concentrated in towns and cities. Therefore, it can be supposed that certain designated cities will be the objectives in disrupting the home front. Cities have large populations and organizations necessary to the functioning of everyday life. Not only that, but because individual contacts are comparatively closer and interrelated in a city, disturbance of one small part of that setup would have a tendency to spread to a comparatively larger sphere. Therefore, if an attack is made on a city, the damage would naturally be greater than if an attack were made on a farm. With this in mind, it can be understood that warfare with an aim of disturbing the home front will be directed at a city instead of a farm, and instead of a small city it will be a large city that is attacked.

In order to be most effective such an attack will be made in secret. Bacteriological warfare will not damage material installations, military or otherwise, but will be directed against human life. Cities, especially those in which are assembled men important in the nation, will probably be the targets. It has been said that various countries of the world have been known to poison important national politicians from times of old. It is not supposed that bacteriological warfare will not have the same aims and possibilities of execution, but instead of being confined to the narrow sphere of national figures, what results can be obtained by employing it among the inhabitants of a large city! Of course, there would be a difference in the variety of bacteria and its degree of spreading, but human lives lost by death, stopping of activity through bacteria, absolute unproductiveness of the people necessary for prevention, the insecurity in the minds of the extremists who fear its spreading, and the national pessimism resulting from it, are all things that are as clear as fire. Reflecting upon the present international situation and the experiences of the past, things like these are more modern and more realistic, and so they are thought to be important. The cases are rare where the existence of one certain individual is absolutely necessary to a certain country. The loss of one person can be comparatively easily replaced by another person, and ordinarily, an effect on the whole country can be avoided. In times of emergency, it is not difficult to suppose that an outbreak of contagious disease among the people would have a terrific effect upon the national strength. Therefore, in this sense, bacteriological warfare in future wars can be thought of as being used to a great extent against the people.

These points must be considered but in addition to the fighting lines and the home front, objectives where bacteriological warfare can be carried easily are the troop garrisons and the important industrial factories. Especially army corps en route would easily become targets.

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## c. Basic Knowledge in the Establishment of Counter Measures:

If the enemy should employ bacteriological warfare on our home front, that is against non-fighting personnel, with the exception of very special areas, the objectives chosen would be the big cities, with others coming in order of importance. This can be surmised from what has been explained. When and where could counter measures be used against this secret attack? Because of the difficulties in estimating the time and place of the attack, it is only natural that preparations for defense must be made in times of peace. Counter measures can be employed only after the attack is made and a clear knowledge of the means is had; at present no country in the world announces its intentions to the public, and regretful though it is, we are not able to gain anything in this manner. We must, therefore, make plans for defense. On this point, however, it is fortunate that the weapons of bacteriological warfare are bacteria of contagious diseases, most of which are well known to the medical profession. This means that the characteristics of the bacteria, the route of the infection, and the form of the disease are known. The deficiency in our knowledge on the methods of the enemy can be supplemented to some degree, and so it is believed that effective counter measures can be established.

## d. Important Bacteria in Connection with Bacteriological Warfare:

The methods which would be employed in the event an enemy waged bacteriological warfare on a city or certain assembled group appear to be vague. However, if the varieties of bacteria that the enemy would probably use at this time were confined into a narrow sphere a certain basic approach can be taken with respect to counter measures. It is therefore necessary to consider just what type of bacteria would be selected.

Just how many bacteria are there in the world today that cause sickness (including some that are not called bacteria from the academic standpoint)? If the comparatively important ones be counted, there would be about 60 varieties. If all that are of the same species, but of a different variety, that have been announced by all the experts were included, the figures would most likely run as high as two or three hundred. As explained, the varieties and types of human disease bacteria are many, but all do not have the same value for bacteriological warfare. The number useful for this purpose is restricted and the enemy would naturally use those bacteria which would produce the greatest loss, that would spread the fastest, or would have the greatest scope, or those that would be slowest in reacting to treatment, and accordingly result in the loss of life. Now, in using bacteriological warfare against flocks of livestock, it would not only result in great loss from the military or industrial point of view, it would also produce scarcity in the necessary food, clothing, and shelter of the nation; it can, therefore, be anticipated that bacteriological warfare will be used against cows, horses, sheep, and pigs. However, people must be considered the primary target.

Considering the foregoing, the most important bacteria would be as follows:

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- (1) Typhoid fever bacteria, various varieties of paratyphus bacteria, dysentery, enteritis of various varieties, and cholera are the so-called contagious diseases of the digestive organs (bacteria transmitted through the mouth).
- (2) Characteristically dangerous diseases such as plague, or those that progress rapidly when improperly diagnosed.
- (3) Bacteria transmitted through wounds, such as tetanus, gas KaiSO (T.N. literal translation - break open sore), bacteria of various kinds, JUNOSEI (pus-producing bacteria).
- (4) Those such as tuberculosis which greatly weaken the strength of the people.
- (5) KIKUCHIYA, and others such as eruptive typhus.
- (6) Those like glanders and HAIDASSO (anthrax?) that are contagious diseases of livestock, but which can also be transmitted to human beings.

Of course, this does not mean that the bacteria selected and listed above by the writer are the only ones most likely to be used in bacteriological warfare.

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.....It is believed that a method might be employed where there would be some suspicion that it was bacteriological warfare, but the passing from the first contagion to the second contagion could not be detected. In this, it must be considered most probable that bacteria of contagious diseases known to us at the present time will be used. Also, with respect to the other bacteria, there will be some guessing as to whether the outbreak is due to warfare or to customary natural causes. Due to conditions existing on our side (Manchukuo), great effectiveness can be expected by the enemy with the outbreak of contagious diseases. It appears that something special is expected when bacteriological warfare is mentioned in the world today, even by a great many of the experts, but it is believed that we should not forget for a moment the contagious diseases already known.

4. Infection through individual contacts, as with venereal diseases, cannot be expected to be effective with the people in general immediately. It is an individual problem. It is therefore assumed that it would not be used.

5. The purpose of bacteriological warfare is not just the taking of lives. If, for instance, we should have a great many patients, and the treatment is not making good progress, it would become necessary to use materials and labor for the treatment over a long period. In time of war, when there is great need on all sides for labor and materials, it is quite clear that this would be a great loss. When the enemy carries out bacteriological warfare in this manner, just what kind of things will he select?

In selecting bacteria to be used to carry out the above plan, it is most likely that a bacteria producing a disease requiring treatment by surgery would be chosen. Under ordinary circumstances a wound would take about three weeks to heal, but when various varieties of wound infecting bacteria set in, it will suppurate, or rot, or break open, and it will not only take the life of the patient, but will require many days of treatment. Of course, during

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that time the patient cannot move about, and the manpower and materials required by the treatment, subtracted from the nation's capacity and resources, make a greater loss than one would suppose. However, the use of this method of infecting wounds, is effective only after a wound exists so that this type of bacteriological warfare could not be carried out in absolute secrecy. Under wartime conditions, when wounds from bombs and shells are received, it is believed that this type of bacteriological warfare cannot be dismissed lightly, especially in the front lines.

6. Regardless of how powerful the first contagion and second contagion are, and of whether it is a contagious disease with serious after effects, it is probable that a disease such as smallpox, for which inoculations exist, would not be used. However, if the giving of inoculations were retarded it might be used. The reason is that this type of strategy is aimed at disrupting our counter measure preparations, and thus has a different characteristic.

7. There are difficulties accompanying the use of bacteria carried by mosquitoes or other insects, but in some cases it is possible they might be used. Eruptive typhus and plague fall into this bracket, and it must be remembered that plague bacteria can be carried by mosquitoes and other carriers. It is also possible to use diseases of cows, horses, sheep, pigs, and wild animals which are contagious to man, but since they are not diseases that would be used generally, no more comment will be made on them.

8. In looking over the above conditions, it is believed that discussion of the possibility of the use of tuberculosis bacteria will not add anything as it is considered entirely improbable.

It is a great mistake to think that all of the varieties of bacteria possible for use in bacteriological warfare would actually be used. The question of which variety of bacteria would be used under what conditions is not completely known at the present time. Not only that, it is something that does not have to be known completely. The above comments are based on many years of experience in the contagious disease field, and cover what is thought to be most important. They are nothing more than an outline and if the reader believes there are no others, he is making a very grave mistake. However, in all things there is something such as relative importance. The above is nothing more than a discussion of what is considered important. In considering bacteriological warfare one should not think only of the important and forget the relatively less important. At the same time, it is believed that it is absolutely necessary to refrain from favoring the relatively less important and ignoring the important. It is clear how much an obstacle this would be in our preparations against bacteriological warfare, which is supposed to be carried out in secret. And so, in the case of bacteriological warfare, from the standpoint of defense, importance should be given to that which it is comparatively easy to carry out, and which would have the greatest effectiveness. From our standpoint, this would be whatever would prevent great damage.

#### COUNTER MEASURES FOR BACTERIOLOGICAL WARFARE

The basic policy of BW counter measures is to stop it before it gets started, and to check its effectiveness once it has begun by limiting it to the smallest possible degree.

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Planned management of precautionary measures, inoculations, and treatment must be had to execute this policy.

Even in peacetime, precautionary observation, prevention, inoculation, and quarantine of patients are four measures used against contagious diseases. In the case of bacteriological warfare these measures must be strengthened all along the line. At the same time, compared with peacetime, consideration must be given to which measures are to be stressed.

In reviewing the history of control of contagious diseases in Manchukuo, it can be seen that it began with treatment, developed, and gradually became what it is today. Because of this trend, many people believe that the establishment of hospitals for contagious diseases is a preventive measure. The establishment of hospitals is, of course, very necessary, but as a counter measure it is only one part, and it is a great mistake to think that contagious diseases can be reduced by this alone.

Active opposition is necessary against bacteriological warfare. Conditions of society are the basis for the outbreak of contagious diseases in peacetime, and the complex living habits of the people are a natural cause. As a result, preventive measures can be taken against the spread of disease. On the other hand, the outbreak of contagious disease in the case of bacteriological warfare is artificially produced. It is necessary to try to prevent the success of such attack and to counter it with inoculation and treatment.

There is nothing essentially different from the inoculation and treatment of disease in BW or in peacetime. Elaboration will be made on precautions and observations.

Precaution is one part of preventive measures, and, as explained above, even in peacetime it is something that must not be omitted, but as a counter measure for BW it must be strengthened by organization and planning. In peacetime the outbreak and spread of a contagious disease is from natural causes and follows natural courses due to the health conditions of society; bacteriological warfare is artificially produced contagion and the source, in many cases, lies in another country. Ordinary precautions are not enough in BW and special policing is required, even international policing. Especially skilled government technicians are required to direct these police-like precautions. Let us discuss this a little further.

Objective precautions which should be the responsibility of the technically skilled officials are the thorough investigation and observation of all varieties of bacteria which are the source of contagious diseases.

As explained above, in the use of bacteriological warfare, it is quite possible that various types of bacteria would be selected. However, it is probable that the condition of the people, the time, the ease of spreading the contagion, the facilities for counteracting various diseases, and the possibility of surprise would all be considered in making a choice. The obvious policy would be to select the one that would do the greatest harm in the least time.

In Manchukuo I would choose as the most dangerous possibilities typhoid fever, paratyphoid, dysentery, food poisoning, and other diseases transmitted through the mouth, such as cholera. Typhoid fever, paratyphoid, and dysentery vary according to the seasons, but would be wonderful material for the enemy in BW as our people are very susceptible and the diseases are prevalent throughout the country.

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These mouth-transmitted bacteria, from start to finish, are carried by drinking fluids or foods, and very rarely in any other way. In the use of this variety of bacteria for BW, directly or indirectly, drinking fluids and foods would become the targets. Therefore, food and drink would be the main items with which precautions must be taken.

The drinking fluids and foods of our people are truly of many varieties and kinds, and all of them offer possibilities for use in BW. In case the enemy used typhoid fever and dysentery it is said that they would penetrate into our individual homes and spread them, but the possibility of this is very small. As members of society, precautions by the individual in his own home are, of course, important, but the main precautions must be taken by organized society as a whole.

Water, especially drinking water, is of primary importance where bacteria transmitted through the mouth are concerned. Bacteria in one individual well will infect the family, or few families, that use it, but bacteria in a water supply used by many families will spread the disease over a far wider area. Filtration and artificial disinfecting methods have been instituted in city water systems and in peacetime water from these central systems is considered safe. However, if contagious bacteria were introduced into the water system the ordinary disinfecting methods would not be sufficient. Under these conditions it would not be possible to rely on the safety of the water supply.

Recently in this region, the pasteurization of milk has become more widespread. However, regretful though it is, this country has not yet enforced strict scientific pasteurization methods. Also, it cannot be guaranteed that there are not unscrupulous businessmen who would use water in the milk. Milk is one of the best places to cultivate bacteria and if contaminated milk reached the people it would certainly infect a large number. It is therefore necessary to exercise great caution from the time the milk leaves the dairy until it is delivered. There is no end to the cases to the east and to the west of the oceans where bacteria transmitted through water supplies, fountains, wells, and milk have caused raging epidemics. It must be acknowledged that such epidemics would be simple to start. A thorough knowledge of past bacteriological history is necessary to judge accurately a future emergency.

The meat of poultry and animals, fish, shellfish and vegetables make up the greater part of our food supply. All of them are generally used and bacteriological warfare using these foods would be very widespread. Among these, the ones requiring most precaution are vegetables, fish, and shellfish. The reason is that all of them are greatly liked by the Japanese and many of them are eaten raw.

It is the custom in the supply of these foodstuffs to retail them to the customers through stores or markets. Lately, because of the commodity rationing system, this organization has been strengthened, and the opportunities for the individual supplier to sell to the individual consumer have been gradually restricted. That is, the method of distribution has gradually changed from a scattered one to a concentrated one.

Because of this, bacteriological warfare is comparatively easily carried out and would be spread over a wider area. It thus becomes more and more necessary to institute controls of food supplies. It is especially necessary that strict precautions be taken with respect to markets and other controlled distributors. First of all, strict measures must be taken in the collection, disposal, storage and distribution of these goods. Finally,

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the production and retailing phases must also be closely watched. It must be assumed that bacteria will be introduced at the point of origin and the products will go to the consumer already contaminated.

In order to enforce controls and inspections the organization must be simplified and all distribution done in a sanitary, orderly manner. If this is done facilities for harvesting, selection, storage, distribution, packing and washing must be improved.

Collective cooking installations are another possible target for BW and again care must be exercised in the collection, distribution, and preparation of all food. In the past, group cooking was done by troops, school dormitories, hotels, restaurants, cafeterias, each according to its individual needs, but recently, with the changes in the world, this has gradually broadened. For example, under the name of "The National Nutrition Problem," the so-called nutrition maintenance fad has become pronounced, and because of it, especially in the schools, group cooking has increased. It is also becoming more and more customary for workers to have their lunch in restaurants in the towns, thus increasing the number of such establishments. In the regional farming villages and factories, also, there are many cooperative messes. There is a tendency for this type of mess to penetrate into the city, with the neighborhood associations serving as the basis. This method may also be found convenient in food rationing controls. In the past, cooperative messes have been developed with no thought of profit making, but they are inseparable from economics, and because management of such a mess cannot be separated from the question of profit, facilities may be incomplete if some profit doesn't result. The weak point of the cooperative mess is that it is an easy target for BW, and the outbreak of contagious diseases and epidemics with these as the basis may become pronounced. Even in the schools which have carried out the nutrition program in Tokyo there are examples of the outbreak of typhoid fever or dysentery. In 1939, at a certain high school dormitory in Tokyo several hundred paratyphoid and dysentery cases were reported. Upon investigation it was found that the germ had come from the cook. The same thing happened at another high school where the students were being served meals under the nutrition program. However, examples like these are not in the least surprising, and carried fortune with misfortune as the contagion was local and could be immediately curbed. Had these been examples of BW the diseases would have been very difficult to check and incalculable damage might have been done.

Numbers in the tens or hundreds are not surprising in the first outbreak of sickness in a cooperative mess, and the number of those succumbing after that could be several times the original. These messes would, therefore, be fertile fields for BW, and it may be assumed that they will not be ignored.

Military messes have little connection with the general public, but there are many cases where troops on the move have employed civilians from the nearest settlement to cook for them. Very strict measures must be taken in cases of this kind to supervise the preparation of food.

Public meeting places are also possible targets for BW. Large crowds assemble in theaters, movies, department stores, railroad stations, swimming pools and auditoriums, while smaller crowds are found in trains, buses and streetcars. It is not likely that diseases transmitted through the mouth would be spread by public gatherings, but there are other diseases which might be and every precaution must be taken to prevent this.

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The above examples are only the most important things which must be considered with respect to counter measures, and they are not the only points which must be dealt with. It is necessary to plan effective counter measures with the size of the community, its complexity, and special characteristics in mind.

#### PRECAUTIONS AGAINST PEOPLE

Precautionary measures would be comparatively simple if the only people who participated in bacteriological warfare were the enemy, but, since it can be assumed that BW will be carried also by people of a third country, and by some within the country as well, precautionary measures become more involved and complex. Close liaison between the general and special policing organizations will be absolutely essential. These policing activities will involve the discovery and exposure of any plan of BW.

The form of the bacteria used would be pure or adulterated bacteria fluid, bacteria dirt, dried bacteria clumps, dried bacteria ends, etc., probably disguised so as to look like something else, and in a great variety of containers. It is not necessary to elaborate on the possible outside packing of bacteria at this time, but glass containers, retail medicine packings, perfumes, fountain pens, and eversharp pencils are ~~some~~ that will probably be used. It must be remembered, however, that bacteria used in BW must be live, so that there is danger in having it in your possession. Ordinarily, therefore, the container would be tightly sealed. Those working on BW counter measures must have a knowledge of bacteriology.

However, in BW it is not necessary to carry the total amount of bacteria to be used in front of the enemy. If a very small amount of live bacteria is available, with an ordinary degree of technical knowledge these can be cultivated and increased into countless thousands. The original bacteria could be carried in a form which would not be dangerous and which could not be detected in case of an inspection. This adds to the difficulties of prevention.

Ordinarily, in research laboratories standard cultures, containers and implements necessary for the disposal of the bacteria are used. This does not mean, however, that no others can be used. Great care must be exercised not to be deceived by the outward appearances of containers, implements and instruments. Regardless of what implements and instruments are used in the cultivation of bacteria, there is a basic motive, and if that motive is grasped exposure is not impossible.

Security of mind is not possible, however, even if importation of live bacteria from a foreign country can be stopped. A variety of bacteria exists within the country and it is comparatively easy for the enemy to use them.

In the past, research on bacteria has been extensive and scientists are to be congratulated on the good they have done for the country. There has been a mutual exchange of the results of experiments between the various research establishments and the individual researchers. The same condition exists at the present time. This is a truly beautiful custom in the academic world and has proved to be a great incentive in the advancement of knowledge. Its weak point is enabling the enemy to obtain both information and bacteria. It is if there were an eye in which BW had not been thought of, even in dreams, there would be nothing better than this exchange, but, unfortunately, conditions at the present time have changed completely and we cannot feel assured that BW is impossible. If we should continue the free and magnanimous exchange

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of bacteria, or, as in the past permit unsupervised research in the laboratories, who can guarantee that grave results will not follow. This problem should be reflected upon not only by experts but by all those engaged in this field.

Complete stoppage of the exchange of bacteria will not only prove to be a hindrance in the field of academic research, but will make for loss of accuracy in investigations, and consequently will be an important obstacle in efforts to promote the health and sanitation of the nation. As a result, BW, the time and place of which cannot be foretold, will be feared more than is necessary, and in checking it the shadow will be seen and the reality will be forgotten. Science must always advance and experiments must always be accurate. Therefore, the essential exchange of bacteria must be as smooth as possible. Under the present circumstances, however, there must be supervision of the exchange, handling and keeping of bacteria.

Rules and regulations on exchange must be established. It is believed that the following three points are enough.

1. To have government registration of the places authorized to exchange bacteria and to prohibit the handling of bacteria by unauthorized establishments. (However, dead bacteria material is excluded.) Registration should cover the man in charge, the purpose, the place, and the supervisory facilities.
2. To have the exchange of bacteria done publicly by the man in charge.
3. To establish certain regulations to check the possibility of an individual in a supervisory capacity misusing bacteria.

The above rules may be felt to be restrictive by those who have engaged in research and experiment in the past without restriction. When such exchange was for peaceful, scientific purposes there was no need for restrictions and knowledge gained was for the welfare of the people. This is the direct opposite of BW and under the present international situation control of bacteria is of the same necessity as control of poison drugs and explosives.

People might say that the sphere of the persons who handle live bacteria is limited and that, therefore, only self-caution is necessary.

Of course, if the purpose could be accomplished completely by that alone, nothing would be better, but the traditional habits of many years cannot be changed in one morning and one evening. By the writer's actual experience it is known that such things cannot be accomplished by individual action. With individual precaution in addition to regulations, it is believed that for the first time the exit of live bacteria from research and experiment stations throughout the country can be checked.

#### ESTABLISHMENT OF DEFENSE MEASURES AGAINST BW

As yet there has never been any actual set up of defense strategy against BW in Japan or Manchukuo. As a result, there is nothing to be used as a reference, but following the needs outlined above it is believed a plan can be drawn up. Of course, it is understood that this plan will have to be broadened or revised in accordance with the special characteristics of the district involved, the already existing health and disease prevention organizations, but it must not be a nominal or inefficient plan. The outline below cannot be said to be complete but it will serve as a general reference and with it this discussion will be brought to a close. The names used are merely for clarity and are not necessarily the ones to be used.

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#### 1. Protection Headquarters:

The focal point of the whole, being a guiding, controlling organization, and at the same time a general affairs organization in peacetime, it can substitute for the regional health and disease prevention organizations with the aim of strengthening and broadening them. There are also cases where it would be more convenient to have them act as liaison offices with important organizations in the region, maintaining close contact with affiliated organizations, especially in the intelligence or criminal fields. They would consult with the police and diplomatic organizations as necessary.

#### 2. Planning Group:

This department would handle the drawing up of plans necessary for the management of defense matters, but if under the Protection Headquarters there would be the advantage of unity and thoroughness in the work.

#### 3. Intelligence Board:

Gathering all types of information, liaison, and dissemination of information.

#### 4. Guidance Group:

Even in peacetime, the effectiveness of preventive measures differs according to the health consciousness of the people. In the event of BW it will be necessary actively to guide the health consciousness of the people so that it will develop and they will cooperate effectively in the defense. This board would be established to handle propaganda through newspapers, pamphlets, radios, lectures, and educational tours.

#### 5. Precautionary Group:

All possible precautions must be taken with respect to facilities concerned with water supply, food collection and distribution, dairies, public meeting places, swimming pools, and all personnel, materials and written material connected therewith. The personnel in this group must have a thorough scientific knowledge so that they can recognize any attempted BW.

#### 6. Inoculation Group:

We have already learned, through experience in the case of plague and smallpox, that workers on a large scale are necessary to carry out inoculations as completely as possible within the prescribed time. When it comes to inoculations in the case of BW, we must assume that we may have to use all varieties that we now possess. This is a big task, not only from the point of view of the technical problems of readjusting the inoculation department, but repeating the inoculations if the BW is on a long term basis. This board can be omitted if the period of attack is short and one inoculation only required.

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#### 7. Inspection Group:

Responsibility for disinfection where it is feared that drinking water, food, or swimming pool water is the medium for spreading the epidemic.

#### 8. Epidemic Inspection Board

This board would be established to inspect the workers of communications organizations, stations, water supply, or food gathering and distributing organizations. It would also be responsible for investigation of sickness in individual homes.

#### 9. Disinfection Group:

Responsible for the disinfection of wells and sewers, areas where disease has broken out, and for exterminating mosquitoes and other insects that are carriers of disease.

#### 10. First-Aid Group:

Responsible for care of patients and those exposed to the disease, transportation, quarantine, and setting up isolation wards or camps for those affected.

#### 11. Treatment Group:

Responsible for treatment of patients; utilization of all facilities of contagious disease hospitals, public and private medical personnel.

#### 12. Research Group:

The variety and method of warfare cannot be predicted. In order to counter any possible attack, research in all phases must be conducted. Suitable defense must be planned for BW that has already been started. This special group will deal with those phases of BW.

#### 13. Training Group:

The personnel of the above groups must have thorough training in policing and disease prevention techniques. Unless they do, a thorough job cannot be expected. Therefore, when the scope of the work is comparatively small, a suitable leader could head more than one group. When the scope is large and the period involved is long, however, it becomes absolutely necessary to have a training group.

#### CLEAR CASES OF RUSSIAN USE OF BW IN MANCHUKUO:

1. In the seventh year of Kotoku (1936), in one prefecture to the north of Peian City, a cholera patient was discovered. In cholera cases in Manchukuo in the past, the disease has been of a certain type. The outbreak in this area was something quite different. As the result of experiments and investigations, it was found that the bacteria type was entirely new, and it was supposed that it was brought in from some new region. Three Chinese soldiers who had entered secretly from the Russian border were rounded up, and the case became clear.

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2. In Inner Mongolia, a case of anthrax broke out among the horses. From articles that had been thrown away, it was clear that it was an act of the Russians. The head of the veterinary experiment station in the Za Baidal region had made some mistake, and thought that if he succeeded in carrying out an attack on animals in L'ansukuo he would be pardoned for the mistake.

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